

1 A METHOD FOR CREATING AND MAINTAINING WORLDWIDE E-COMMERCE

2  
3 BACKGROUND OF INVENTION

4 1. Field of the Invention

5 The field of this invention relates to a virtual network of e-commerce e-malls, satellite e-  
6 malls, e-shops, e-distributors and web sites. More specifically, the present invention relates  
7 means for creating and maintaining worldwide e-malls and each of these e-malls will offer  
8 means for creating e-shops, e-distributors and web sites without the need of an e-commerce  
9 infrastructure or even a web server.

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11 2. Prior Art

12 The Internet has a tremendous potential with its worldwide reach; also, there are a lot of  
13 challenges and opportunities. At the present, there are needs for easy and affordable  
14 worldwide e-commerce solutions where seller can have their goods and services sold without  
15 the expertise or the expenses that today's e-commerce requires.

16  
17 Today's e-commerce web sites henceforth called e-shop(s) are of a dynamic type with  
18 products and/or services that are available to a broad base of buyers. One good example of a  
19 dynamic e-shop is Amazon.com.

One other type of e-commerce setup is the e-shopping mall where dynamic e-shops are created and updated directly by a user and henceforth called e-mall(s). The four most popular are: VStore.com, ViaWeb.com, Bcentral.com and BigStep.com.

Stores in these e-malls are treated as independent dynamic e-shops with specific URL (Uniform Resource Locator) addresses and their products/services are only available within their closed environment. Thus, products/services cannot be shared among other e-malls or e-shops even within their own network of dynamic e-shops at the e-mall.

Except VStore.com where all e-shop virtually sells products from distributors.

The dynamic e-mall setup does not enhance the shopping experience nor facilitates the interaction between buyer and seller. Since a buyer will have to move from e-shop to e-shop in the e-mall. Time is thus wasted and sales can be lost. Furthermore, the dynamic e-mall concept cannot be created without an elaborate and expensive e-commerce infrastructure that requires extensive knowledge and expertise.

Currently, dynamic e-mall will not allow the creation of specialized e-shops that can sell their products/services in conjunction with similar products/services from others e-shops.

Today's e-commerce requires solutions where seller can have their products/services available to a broad base of buyers, also, virtually available to other e-shops, satellite e-malls and e-malls where they will be offered to a broader clientele base. For this to be possible, the process for creating and updating e-malls, satellite e-malls, e-shops, e-distributors and web sites must be on-line and easy to setup and use.

Buyers on the other hand, need a solution where they will have a broad selection without having to go to many different e-shops to find what they're looking for, and also be able to view web pages in their own native language.

It is the object of this invention to offer easy and affordable e-commerce solution worldwide with a single e-commerce and e-services resource infrastructure as to allow anyone anywhere in the world to provide e-commerce solution without the need of an e-commerce infrastructure or even an Internet server.

#### SUMMARY OF THE INVENTION

It is the object of this invention to demonstrate a virtual electronic shopping mall where on-line users can create and update e-malls which in turn offers others the ability to host e-

shops and web sites offering products/services. Also, an e-mall will have means for customizing a satellite e-mall and means for hosting pre-set ones. Moreover, this invention will allow creating and maintaining of the dynamic e-mall concept without the need of an e-commerce infrastructure or even the need of a web server.

It will further have the ability to exchange interfaces uploaded by a user or allow the user to select one provided by the virtual network (the host computer with the technology infrastructure).

Also, the ability to display interfaces in more than one foreign language for: e-malls, satellite e-malls, e-shops, e-distributors and web sites. All e-malls, satellite e-malls, e-shops, e-distributors and web sites are within a network where products and services can be shared among any e-mall, satellite e-malls, e-shop or web site by making them virtual.

For instance, an e-shop can sell its products dynamically, or have other e-malls; satellite e-malls and e-shops in the virtual network selling them virtually. The advantage of this virtual electronic network environment is to make products and services available to a broader base for both, sellers and buyers.

1       The virtual electronic network environment will enhance the way people shop  
2       electronically. Thus, making a wider selection of products and services available to any e-  
3       mall, satellite e-mall, e-shop and web site within the virtual network. It will offer means for  
4       the creation of specialized e-shops, satellite e-malls, e-malls and web sites, tailored uniquely  
5       to a specific market segment. Further, it will simplify buyers' decision by offering them a  
6       broad and specialized selection of products/services.

7  
8       In one other embodiment means for having one content page's object used to search  
9       other contents at the virtual server and fetch at least one other content, also, having means to  
10      present a single page having a plurality of contents from two or more sources and the  
11      contents having a relationship based on at least a partial match between an least one object  
12      (e.g. word, hidden object, etc.) from the first content and at least one object from at least a  
13      second content.

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15      Yet in another embodiment means to track users viewing contents and create a history of  
16      visited contents for each user.

17  
18      Still in one other embodiment will have means to register user and present content based  
19      on each registered user's preset preferences and user's location.

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2 Yet another embodiment will have means to present content based on a user's previously  
3 viewed content page.

4  
5 Also in another embodiment will have means for satellite e-mails with specialized  
6 contents to be integrated into e-mails and web sites.

7  
8 In one other embodiment web sites will be able to present content virtually and the  
9 contents they are presenting are hosted by other web sites

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11 Still in another embodiment it shows means for exchanging interface and preset interface  
12 rendering from a disk-file parameters.

13  
14 It is also the intent of this invention to permit users to include e-commerce at web sites  
15 that are already in use. ~~Thus,~~ thus, offering a new way to enhance them without the cost of  
16 providing the e-commerce infrastructure that is required, or even having to install and  
17 maintain a web server.

18

1        It will further permit the creation of virtual web sites, other than shopping. For instance,  
2        a web site may be virtual on-line schools, cities, etc. The use of this invention is without  
3        limits, and, as more goods/services are offered, the more it will allow the creation of a virtual  
4        shopping and non-shopping web sites and a combination of both.

5  
6        It will also integrate the world by allowing an e-shop in one country to sell in another  
7        country or to cross-sell products from a distributor or a manufacturer and having them  
8        delivered directly to the buyer, thus reducing storage, shipping and handling costs.

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11        **BRIEF DESCRIPTION OF THE DRAWINGS**

12        The accompanying drawings, which are incorporated in the form a part of this  
13        specification, illustrate embodiments of the invention and, together with the description,  
14        serve to explain the principles of the invention:

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16        Fig.1 illustrates a worldwide e-commerce sharing a single e-commerce resource  
17        infrastructure.

1 Fig. 2 illustrates the e-commerce resource infrastructure available to each e-commerce of

2 Fig. 1.

3

4 Fig.3 illustrates the virtual e-shopping network system where e-malls, e-shops, e-  
5 distributors and web sites share a single resource.

6

7 Fig. 4 illustrates a communication link between a client and a server computer. The  
8 process of converting ASP pages into HTML by the server computer and transmit it to the  
9 client computer thereafter.

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11 Fig. 5 illustrates the process that takes place in converting ASP pages templates into  
12 HTML web pages.

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14 Fig. 6 illustrates a dynamic electronic store.

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16 Fig. 7 illustrates a dynamic electronic shopping mall.

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18 Fig. 8 illustrates multiple dynamic electronic shopping mall with multiple dynamic  
19 electronic shops.



Fig. 9 illustrates how dynamic electronic shops become virtual ones in the dynamic shopping mall.

Fig. 10 illustrates virtual electronic shopping mall with dynamic and virtual electronic shops.

Fig. 11 illustrates multiple dynamic electronic shops with departments, category, sub-category and products in a dynamic shopping mall.

Fig. 12 illustrates how a dynamic electronic shop's departments, category, sub-category and products become virtual ones in the electronic dynamic shopping malls and dynamic electronic stores.

Fig. 13 illustrates a dynamic database table that represents the illustration of Fig. 11.

Fig. 14 illustrates a virtual database table that represents the illustration of Fig. 12.

Fig. 15 illustrates multiple dynamic servers' setup sharing database objects with the virtual server.

Fig. 16 illustrates a database table to be used to translate web page text objects into multiple foreign languages.

Fig. 17 illustrates a web page drop down elements.

Fig. 18 illustrates the source code for the web page drop down of Fig. 17.

Fig. 19 illustrates an ASP program to be used to translate web page database text objects.

Fig. 20 illustrates a database table with products in multiple foreign languages.

Fig. 21 illustrates a database table with database table's object in multiple foreign languages.

Fig. 22 illustrates a client and a server computer's setup used by the server computer to process ASP pages, and transmits its result in the HTML format to a client computer.

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Fig. 23 illustrates a web page template.

Fig. 24 illustrates a web page template with include files.

Fig. 25 illustrates the process of exchanging a web page template.

Fig. 26 illustrates a web page template with include files and their respective folders.

Fig. 27 illustrates folders for the include files of Fig. 26.

Fig. 28 illustrates a client receiving an interface from multiple servers.

Fig. 29 illustrates a method of uploading a file with settings to the virtual network server.

Fig. 29a illustrates two files with settings in a folder for each template.

Fig. 30 illustrates a file with settings applied to a web page.

Fig. 31 illustrates virtual network's satellite e-malls and e-malls' satellite e-malls.

Fig. 31a illustrates satellite e-malls receiving e-services through the virtual network.

Fig. 31b illustrates two satellite e-malls receiving e-services through the virtual network from three different sources.

Fig. 31c is a further embodiment of fig. 31b and it illustrates two satellite e-malls and two e-malls virtually presenting a single content page from satellite e-malls and VNRI.

Fig. 31d illustrates a content page created by using contents from two separate sources: one from VNRI and another from a remote computer.

Fig. 31e is a further embodiment of fig. 31d and it illustrates three methods of using HTML objects on a content page for allowing the fetching of contents from a remote computer and VNRI.

Fig. 31f illustrates contents from a remote computer routed through VNRI to another computer that supplies them virtually to a client computer.

Fig. 32 illustrates a web page divided in two windows, one for e-commerce and the other for e-services.

Fig 33 illustrates the web page of Fig. 32 with e-commerce on the left and e-services on the right.

Fig. 34 illustrates a list of products for the chosen sub-category.

Fig. 34a is a further embodiment of fig. 34 and it illustrates a content page created by using contents from two separate content sources within VNRL.

Fig. 35 illustrates a method of user tracking between a web server and a web browser.

Fig. 36 illustrates a web browser's user viewing web pages from multiple web sites and e-shops.

Fig. 37 illustrates a method of a web server tracking user surfing experience.

Fig. 38 illustrates a method of a web server presenting user's surf list for review.

Fig. 39 illustrates a user reviewing web pages from his/her surf list.

Fig. 40 illustrates the managing of user's customized contents.

Fig. 41 illustrates a user viewing previously viewed customized contents.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention now will be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout.

As will be appreciated by one of skill in the art, the present invention may be embodied as a method, a virtual network, or a computer program product. Accordingly, the present

invention may take a form of an entirely software embodiment or an embodiment combining software and hardware. Furthermore, the present invention may take the form of a computer program product on a computer-readable storage medium having computer-readable program code means embodied in the medium. Any computer readable medium may be utilized including, but not limited to: hard disks, CD-ROMs, optical storage devices, or magnetic devices.

As is understood by those skilled in the art of Web client/server communications, a user access a server by establishing a TCP connection between client and server. Client and server communicate by using HTTP protocol over a TCP connection. Data transferred from servers to clients are HTTP objects (e.g. HTML objects).

Furthermore, any reference to names of a product or of a company is for the purpose of clarifying our discussion and they are registered to their respective owners.

## GLOSSARY OF USED TERMS

Before explaining this invention, let us first explain some of the terms that will be used throughout.

1        **ASP** stands for *Active Server Page* and it is used to dynamically create web pages on the  
2 server side and transmit them to a requesting client as HTML objects.

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4        **Back end** means a computer system where users retrieve (content) from and view it at  
5 another computer (front end). In the case of the Internet a computer with a web server is the  
6 back end.

7  
8        **Cookie** is a file kept by a web browser at the end user computer where the server or a  
9 script program running at the web browser send requests to the browser to save a value in the  
10 cookie file for later retrieval. It has a cookie name and the cookie's value and the date that it  
11 will expire.

12  
13        **Cross-Sale/Cross-Presentation** is when there are at least two e-shops/web sites each  
14 having at least a link pointing to the other products/contents and vice-versa, in such a manner  
15 that a user starting from the first site will be directed to the second site and be able to get  
16 back to the original starting point, first site. The same can be used for any number of e-  
17 shops/web sites. It will increase the number of goods/contents for viewing by moving from  
18 site to site and always able to return to the starting location; see also virtual hosting.



**Dynamic e-shop and dynamic web site** is when products (also called goods) and services are part of the hosting e-shop or web site. That is, the e-shop or web site will do all the required maintenance. Each e-shop or web site is hosted within an e-mall.

**E-services** are services (also called contents) supplied to VNRI by a third party or part of VNRI. E-services are used in conjunction with VNRI's e-commerce. These e-services have means for associating with the e-commerce counterpart.

**Front end** means a computer system where users view information (also called content and used interchangeably) that is located at another computer system (back end). In the case of the Internet a computer with a web browser is the front end.

**HTML** stands for Hypertext Markup Language.

**HTTP** stands for Hypertext Transfer Protocol.

**JavaScript** is a commonly used language by clients and servers as well. On the client side it is used as means of interacting with HTML objects. On the server side it is used as a script language and it works in conjunction with the ASP and others technologies.

**Satellite e-mall** is a sub-set of an e-mall created by the virtual network system or by each individual e-mall (in the case of customized satellite e-mall). An e-mall has the option to include or to exclude services from a satellite e-mall.

**Session Variable** is a variable that the web server keeps in its memory for the duration of a web browser user visit to the web site or, in most cases, 20 minutes after the user access the last page from the web server. Any value can be assigned to a session variable. One good example is the use of session variables with the ASP technology.

**SQL** stands for *Structured Query Language* and it is a text string used by a database server (a specialized software to manage databases) as to guide it in querying and retrieving database objects thereof.

**TCP** stands for Transfer Control Protocol.

**URL** stands for *Uniform Resource Locator* and it is an Internet address used by a web browser to fetch a web page object from a web server.

**WEB SERVER** is a computer with specialized software to manage communication between a client's web browser and the server computer. Also, it communicates with others technologies that are within the server computer.

**VNRI** stands for *Virtual Network Resource Infrastructure* (also called virtual network, virtual server and used here interchangeably) and it is the hosting environment hosting all e-malls, satellite e-malls, e-shops, e-distributors and web sites dynamically and virtually. Also, it is where the e-commerce infrastructure is hosted (hardware, software and the Internet gateway).

**Virtual e-mall** is when an e-mall place goods/services from any e-shop or web site from the virtual network. Products offered by a virtual e-mall can be virtual ones and/or they can dynamic as well and hosted by the virtual e-mall.

**Virtual e-shop or virtual web site** is used when an e-shop or web site offers products/services from another e-shop or web site within the virtual network. Products/services are called **virtual** products because they are available to an e-shop or web site other than the hosting one.

**Virtual Hosting** is used when three levels of software and/or hardware are used. The first level does the physical hosting and having at least two software elements hosting contents. The second level goes in between the first level and the third levels acting as an intermediary between the hosting level (first) and the presentation level (third). The second level can have one or more software elements and the third level in most cases has one software element, although it can have more than one as well. The second level does the virtualization. The **virtual hosting** can be done with software elements in a single computer or a plurality of computers distributed over a network or over the Internet and in all cases, the virtualization (second level) is done by the software element, computer, means, etc. that goes in between the hosting level (first level) and the presentation level (third level). An end user viewing the presentation has the impression that the contents are hosted by the virtual part, although the virtual part is just a go in between.

**WEB SERVER** is a computer with specialized software to manage communication between a client's web browser and the server computer. Also, it communicates with others technologies that are within the server computer.

#### D) THE VIRTUAL NETWORK

1

2       Let us further explore the virtual network. There will be many e-malls, e-shops, e-  
3 distributors and web sites in the virtual network. An e-mall may or may not have a dynamic  
4 e-shop or web site. Also, an e-shop or web site may or may not have products and/or services.  
5 An e-mall can have an e-shop or web site that is empty (without products or services). Based  
6 on the previous situation, all products and/or services offered by an empty e-shop or web site  
7 are virtual ones.

8

9       Lets further explore the interaction that goes between a client (user) computer and the  
10 virtual network server.

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12       A user at a client web browser initiates communication with the virtual network server  
13 and register an e-mall. Other users will do the same. After an e-mall is registered it is ready to  
14 receive e-shops or web sites.

15

16       Let us say that, a user registers an e-shop and call it "E-SHOP A". The user of *E-SHOP A*  
17 then adds products to it. Other registered e-shops at the network will place products in their  
18 e-shops as well. This process is called dynamic, since products are within each individual e-  
19 shop.

For the sake of our discussion, let's assume that, there are two e-shops: **E-SHOP A** and **E-SHOP B**. They both have products. Now the user of **E-SHOP B** accesses the virtual network server, receives a page with information about services, products, departments, categories, sub-categories, e-shops and web sites. This user now includes, *products* from **E-SHOP A** and a *sub-category*, then, sends it to the virtual network server. The network server receives and saves **E-SHOP B** selection (products from **E-SHOP A** and a sub-category) into a virtual database table.

Now, a user accessing **E-SHOP B** will have products from **E-SHOP A** and a sub-category with all of its products (virtually), also, all of **E-SHOP B** products (dynamically).

As we've said before, a client computer communicates with a server computer over the Internet or Intranet by a TCP connection. Moreover, a client sends HTTP requests to server. The server then process such requests and creates a web page (e.g. HTML objects), and sends it back to the client.

Furthermore, a client computer has a screen that is the means of interfacing with a user. It also has web browser software that runs in the client computer memory. The web browser

1 is the client computer user's interface. And it presents a web page as objects (e. g. HTML  
2 objects) to the user. The objects can be text, audio, video, image, forms, links, etc. Also, the  
3 web browser communicates with a server computer.

4  
5 Let's move on and discuss the Virtual Network Resource Infrastructure (henceforth  
6 called VNRI). The virtual network offers an infrastructure for worldwide e-commerce at a  
7 single location and available to anyone without any e-commerce infrastructure or even a  
8 server.

9  
10 This VNRI infrastructure is located at a single location and it will be the back-end for  
11 worldwide front-ends accessing it. Also, this infrastructure will include software programs to  
12 manage all the VNRI associated e-malls, satellite e-malls, e-distributors and web sites.  
13 Further, it will include Internet, e-mail, credit cards gateways and all the necessary hardware.

14  
15 The objective of this invention is to allow the creation of a plurality of e-malls and each  
16 e-mall will use VNRI's hosting and management means and offer e-shops, e-distributors and  
17 web site an e-commerce and e-service infrastructure (hosting and management) without  
18 having the infrastructure of their own. Each e-mall will be able to sell its e-shops products  
19 and e-shop's products located in other e-malls. Also, an e-shop will be able to sell its products

1 and others e-shops' products. There will be only a single infrastructure for a worldwide use  
2 and it will be within VNRI. As it is now clear, e-malls, satellite e-malls, e-distributors and  
3 web sites, all use the VNRI for e-commerce and e-services. This process will give the idea  
4 that each one has an e-commerce and/or e-service infrastructure of its own because each will  
5 offer an end-user means for using all the available resources within the VNRI.

6  
7 Fig. 1 shows e-commerce located at different parts of the world. Fig. 2 shows the e-  
8 commerce infrastructure that is available to each e-commerce of Fig. 1. Figs. 23, 24, 25, 26,  
9 27 and 28 show the process of uploading interfaces to each of the e-commerce of Fig. 1. Each  
10 e-commerce of Fig. 1 is able to present its solutions as if each one had its own e-commerce  
11 infrastructure.

12  
13 Back to Fig. 1. It shows a method of using a single e-commerce resource infrastructure at  
14 a single location and providing e-commerce solution worldwide without each one having to  
15 replicate the e-commerce resource infrastructure at each location.

16  
17 As it is shown, there is an e-commerce located in Brazil 102, USA 104, Mexico 106,  
18 France 108, Germany 110 and Canada 112. Although the e-commerce is spread worldwide,  
19 the e-commerce resource infrastructure is at a single location at VNRI 100.



Fig. 2 is the e-commerce infrastructure that is available to each e-commerce that was presented in Fig. 1 and it is within VNRI 100 of Fig. 1.

There are three layers of e-commerce within VNRI - Fig. 2. E-distributors/e-manufacturers 260 (henceforth called e-distributors), E-malls 268 and satellite e-malls (pre-set satellite e-mall 271 and customized satellite e-mall 273).

Each will present e-commerce differently. Each e-distributors 260 has an e-commerce web site and will be able to sell its products directly (e-shop A 262) or have other e-shops (e-shop B 281 - arrow line 282) and e-malls (e-mall 268 - arrow line 266) selling them virtually. In either case, end user/shoppers (henceforth called end user) will be able to view each one independently. End user A 278 views e-shop A 262 and e-shop B 281.

E-malls, on the other hand, have the means to allow the creation of e-commerce e-shops or use the services of agents. Each e-shop will be able to sell its products directly or have them sold by the e-mall and its affiliated satellite e-malls. E-mall 268 has e-shop B 281 (arrow line 265). As shown, e-shop B 281 has end user A 278 viewing its products and also

1 end user B 276 is viewing them through e-mall 268, pre-set satellite e-mall 271 and  
2 customized satellite e-mall 273.

3  
4 As presented, all products of an e-shop can be sold by the e-shop, by the e-mall where e-  
5 shop is dynamically located and by the e-mall's affiliated satellite e-malls. E-mall 268 has e-  
6 shop B 281 (arrow line 265). E-mall 268 sells e-shop B 281 products (arrow line 267). E-mall  
7 268 makes all of its e-shops products available to each of its affiliated satellite e-malls. As  
8 shown, e-mall 268 has a pre-set satellite e-mall 271 and a customized satellite e-mall 273.  
9 And each one sells products from e-shop B 281 (arrow line 279).

10  
11 Also, an e-mall will have the means as to allow the use of agents' services. An e-mall can  
12 have one or more agents and each agent will be able to offer their expertise to e-shops in a  
13 one-to-one basis. An e-shop can be created directly to an e-mall or by an agent, also, an agent  
14 can manage e-shops, e-distributors and web sites for one or more e-malls. E-mall 268 has  
15 agent 286 and it is the creator (arrow line 288) of e-shop B 281. For sake of simplicity e-shop  
16 B 281 has e-mall 268 point to it (arrow line 265) and Agent 286 (arrow 288). In this case it  
17 means that Agent 286 created e-shop B 281 (arrow 288) by using the e-mall 268 as the holder  
18 of e-shop B 281 (arrow 265).

Before proceeding any further, let's explain what an agent is. An agent is a person authorized to provide management services to the e-mall's e-shops. Also, an agent has log in and management rights to log in and manage e-shops for any e-mall in the virtual network resource infrastructure. An e-shop can be created and managed by its owner or have an agent to represent the e-shops within the e-mall.

Fig. 3 shows a virtual e-commerce environment where e-malls (302, 303, 304, and 305) with e-shops share the virtual network resources 301 (e-commerce infrastructure: hardware, software and the Internet gateway). It further shows the ability for one e-shops to cross-sell other e-shops' products virtually (306, 307, 308 and 309).

As it will be understood by those skilled in the art, ~~The, the~~ virtual network resources will have all the required software and hardware that is needed to host e-malls, satellite e-malls, e-shops, e-distributors and web sites over the Internet or over a computer network.

As it can be seen at Fig. 3, an e-mall will be able to host e-shops as if they had their own e-commerce. And since the system offers means for user plug in interfaces and the availability of different foreign languages, anyone anywhere in the world will be able to offer e-commerce services without the expenses involved.

Fig. 4 shows a communication method between a client computer and a server computer. It should be understood that, not all parts of the client and server computers are shown in the drawing. It is done as is for sake of simplicity, and it is not intended to hide or obscure this invention. Furthermore, those skilled in the art will be able to follow the embodiments and fully understand its meanings.

For example, a memory is present at the client computer, since, this is where the web browser software resides and is executed. The same is true for the screen. Where the web browser presents web objects in a visual form for the user. Neither a means for saving information like a disk unit nor a means for entering data such as a keyboard or a mouse are shown. On the server side, a memory (where Web Server and ASP server are resident) and a storage unit (where the Database, ASP Programs and Web Page Template are stored) are shown. It can also have a screen, mouse, keyboard, etc.

Back to Fig. 4. Client computer 410 establishes a communication link 420 with a server computer 440. The client computer 410 represents the computer with a web browser where an end user views web sites. Server computer 440 is the VNRI hosting the e-commerce.

1       A user at client computer 410 enters requests through the user interface 411 (web  
2       browser). These requests are processed at the **web browser** 412 that is resident in the client  
3       computer memory. For instance, if a link to another page is selected by the end user. The web  
4       browser 412 will establish a communication link 420 with server computer 440 and transmit  
5       a request for the new web page. Server computer 440 receives the request through the  
6       communication link 420 and passes it to the resident web server software 430.

7  
8       After the server computer 440 receives the request for a new web page, let's say that, the  
9       requested web page is an ASP page. The web server 430 connects with the ASP server 431. It  
10      in turns reads the web page template 436 and ASP programs 437. Next, the ASP server 431  
11      will include the ASP programs 437 into the web page template 436, thus, forming a single  
12      file and executes it. There are cases that as the file is executed, the ASP program will need  
13      data from a database. In such cases, the ASP server 431 establishes a link 432 with the  
14      database 433 then reads/writes to it, as needed.

15  
16      After a line of programming code of the ASP program 437 is executed, its result (if any)  
17      is inserted into the web page template 436, thus, creating a final web page (more of it later).  
18      After all lines of the ASP program 437 are executed, the ASP server 431 will pass the final  
19      web page to the web server 430. The web server 430 establishes a communication link 420

1 with client computer 410 and transmits the web page to the web browser 412. And the new  
2 web page is displayed on the user interface (screen) 411. Thus finalizing the communication  
3 process between a client and a web server computer.

4  
5 Fig. 5 further explains the ASP process. ASP template 551 receives ASP programs A, B,  
6 C and D 552 (usually, they are *include files*). Next, a web page 550 in the HTML format is  
7 created. It is now clear to those skilled in art how the communication process between a  
8 client computer and a server computer happens. ~~Also, and~~ the process of creating web pages  
9 at the server computer with the use of ASP technology.

10  
11 Since the object of this invention is to present the process of creating worldwide virtual  
12 e-malls and each one offering e-commerce to e-shops, e-distributors and web sites, lets first  
13 explain the dynamic process involved with e-shops and e-malls. Next, the process that is  
14 involved with virtual e-malls and e-shops will be presented as well.

15  
16 Fig. 6 shows a dynamic e-shop with departments. Each department having a category, a  
17 category having a sub-category, and the sub-category having products. It should be noted that,  
18 a department can have one or more categories, a category can have one or more sub-  
19 categories, and a sub-category can have one or more products. Fig. 7 shows a dynamic E-

**MALL 760** with three e-shops: **E-SHOP A 761, E-SHOP B 762 and E-SHOP C 763**. A

dynamic e-mall is the host for one or more dynamic e-shops (Fig. 6).

Now that we know the dynamic process, let's move on and explore our virtual network concept. Fig. 7 shows an e-mall 760 with three e-shops: E-shop A 761, E-shop B 762 and E-shop C 763. Fig. 1 shows the VNRI with e-commerce worldwide. Each e-commerce at Fig. 1 will have the same e-commerce infrastructure that is available to the e-mall of Fig. 7. It is like we're taking a dynamic e-mall of Fig. 7 with dynamic e-shop of Fig. 6 and offering means for their replication worldwide. Also, each one will have the complete e-commerce infrastructure that is available at the VNRI (Fig. 2).

Furthermore, the VNRI has hosting and management means for hosting and managing various e-malls and each e-mall will use the VNRI hosting and management means for hosting and managing e-shops, e-distributors and web sites. The VNRI has the means for allowing the offering of e-commerce solution to e-malls, satellite e-malls, e-shops, e-distributors and web sites.

Fig. 8 is an overview of a virtual e-mall where four e-malls coexist and each having their dynamic e-shops. As we further explore it, we'll see that each e-shop is able to share its

products with others e-shops and e-malls in the virtual network. Each e-mall has three dynamic e-shops. E-MALL A 800 has E-SHOP A-1 806, E-SHOP A-2 805 and E-SHOP A-3 804. E-MALL B 801 has E-SHOP B-1 815, E-SHOP B-2 814 and E-SHOP B-3 813. E-MALL C 803 has E-SHOP C-1 812, E-SHOP C-2 811 and E-SHOP C-3 810. E-MALL D 802 has E-SHOP D-1 807, E-SHOP D-2 808 and E-SHOP D-3 809.

Fig. 9 is a further embodiment of Fig. 8. It shows how to create a virtual e-shop.

Dynamic e-shops are made virtual once they are placed at others e-malls or e-shops within the VNRI. For instance, dynamic E-SHOP A-1 806 is now virtual 825 at E-MALL D 802. Dynamic E-SHOP A-3 804 is now virtual 820 at E-MALL B 801. Dynamic E-SHOP B-3 813 is now virtual 821 at E-MALL C 803. Dynamic E-SHOP D-2 808 is now virtual 823 at E-MALL C 803, and also, virtual 824 at E-MALL A 800. Finally, dynamic E-SHOP D-3 809 is virtual 822 at E-MALL C 803.

Fig. 10 is a further embodiment of Fig. 9 with virtual e-shops included. As it is shown,

E-SHOP A-1 is dynamic 806 at E-MALL A 800 and it is virtual 825 at E-MALL D 802. E-SHOP A-3 is dynamic 804 at E-MALL A 800 and it is virtual 820 at E-MALL B 801. E-SHOP B-3 is dynamic 813 at E-MALL B 801 and it is virtual 821 at E-MALL C 803. E-SHOP D-3 is dynamic 809 at E-Mall D 802 and it is virtual 822 at E-MALL C 803. E-SHOP



D-2 is dynamic 808 at E-MALL D 802 and it is virtual 823 at E-MALL C 803, and also, virtual 824 at E-MALL A 800.

Further, a dynamic e-shop becomes a virtual one by its products being shared by others e-shops in the virtual network. Let's further explain it. If a buyer is accessing E-MALL A 800, he/she will have all dynamic e-shops (E-SHOP A-1 806, E-SHOP A-2 805 and E-SHOP A-3 804) and the virtual E-SHOP D-2 824 as well. E-MALL D 802, which has E-SHOP A-1 825 now available as a virtual one, and it is dynamic 806 at E-MALL A 800. E-MALL C 803 has E-SHOP D-2 823 and E-SHOP B-3 821 as virtual, and finally, E-MALL B 801 has E-SHOP A-3 820.

Fig. 11 Shows dynamic departments, categories, sub-categories and products within individual e-shops, as we will see, they will also become virtual ones, like we've seen with the e-shops. Department, category, sub-category and products are dynamic at E-SHOP A-2 1105 at E-MALL A 1100. The same is true with E-SHOP C-2 1111 at E-MALL C 1103, E-SHOP B-1 1115 and E-SHOP B-3 1113 both are dynamic at E-MALL B 1101.

For sake of simplicity, only one department with one category and one sub-category are shown. It should be noted that, more than one department can exist at an e-shop; a

1 department can have one or more categories, and a category can have one or more sub-  
2 categories,

3  
4 Fig. 12 is a further embodiment of Fig. 11. It shows dynamic departments, categories,  
5 sub-categories, products and e-shops becoming virtual ones. As it is shown, E-SHOP A-2's  
6 1105 (Department A-2 1140, Category A-2 1141 and Sub-category A-2 1142) are now virtual  
7 1150 at E-MALL C 1103. E-SHOP C-2's 1111 (Product C-2-1 1160, Product C-2-2 1161 and  
8 Product C-2-3 1162) are now virtual 1151 at E-MALL A 1100. E-SHOP A-2 1105 is virtual  
9 1153 at E-MALL B 1101. E-SHOP B-3 1113 is virtual 1152 at E-MALL C 1103 and E-  
10 SHOP B-1 1115 is virtual 1154 at E-SHOP B-3 1113. As it can be seen, dynamic e-malls and  
11 e-shops can have any combination of e-shops, departments, category, sub-category and  
12 products virtually.

13 Before we continue with our discussion, lets first review the dynamic database table of  
14 Fig. 13 and virtual database table of Fig. 14. The dynamic database table of Fig. 13 holds all  
15 data information about all e-malls e-shops and web sites. Virtual database table of Fig. 14 is  
16 the database table that represents the virtual part of the virtual network.

17 Fig. 13 shows a database table for a dynamic configuration of Fig. 11. Lets go back to  
18 Fig. 11 and explain E-SHOP A-2 1105. As it is shown, Department A-2 1140, Category A-2

1 1141, Sub-category A-2 1142, Product A-2-1 1143, Product A-2-2 1144 and Product A-2-3  
2 1145 are within E-SHOP A-2 1105 located at E-MALL A 1100. The first three rows (rows  
3 1,2 and 3 of the ID column) of the dynamic database table of Fig. 13 shows, **E-Shop A-2** at  
4 the column **Shop\_Name** it represents the E-SHOP A-2 1105 (Fig. 11). **Department A-2** at  
5 the column **Department** it represents Department A-2 1140 (Fig. 11). **E-Mall A** at the  
6 column **Mall\_Name** it represents E-MALL A 1100 (Fig. 11). **Category A-2** at the column  
7 **Category** it represents Category A-2 1141 (Fig. 11). **Sub-category A-2** at the column **Sub-**  
8 **category** it represents Sub-category A-2 1142 (Fig. 11). **Product A-2-1**, **Product A-2-2** and  
9 **Product A-2-3** at the column **Product\_ID** they represent Product A-2-1 1143, Product A-2-2  
10 1144 and Product A-2-3 1145 (Fig. 11). Anyone skilled in the art will be able to follow the  
11 remaining rows of the table of Fig. 13 and the diagram of Fig.11.

12 Fig. 14 shows a database table for the virtual part of Fig. 12. And as we've done with Fig.  
13 13, we'll explain the first three rows (rows 1,2 and 3 of the ID column). The column  
14 **Virtual\_Mall** represents the e-mall that virtually receives products/services from other e-  
15 shops. **E-MALL A** at the column **Virtual\_Mall** represents E-MALL A 1100 (Fig. 12). The  
16 value *Product* at the column **Type** of Fig. 14 says that they are virtual products 1151 (Fig.  
17 12). And finally, the names of the virtual products at the column **Virtual\_Type\_Name**  
18 (Product C-2-1, Product C-2-2 and Product C-2-3) represent products (Product C-2-1 1160,  
19 Product C-2-2 1161 and Product C-2-3 1162 - Fig. 12). Also, *Department*, *Category Sub-*

1 *category* and *Shop* at the column **Type** of Fig. 14 indicate their respective dynamic types of  
2 Fig. 12.

3 It should be noted that, dynamic database table of Fig. 13 and virtual database table of  
4 Fig. 14 can be related, although not shown. Also, anyone skilled in the art will be able to use  
5 both tables and formulate SQL's text string to create queries that will reflect a single resultant  
6 table. A combination of SQL text string that represents dynamic table (Fig. 13) and retrieved  
7 database objects from the virtual table (Fig.12) will be used to form a single SQL text string  
8 to query the dynamic database table (Fig. 13) and, retrieve a single database table.

9 Let's go back to Fig. 12 and use E-MALL B 1101 for our next example. E-MALL B  
10 1101 has E-SHOP B-1 1115 and E-SHOP B-3 1113 (dynamic e-shops). It also has E-SHOP  
11 A-2 1105 as a virtual e-shop 1153. Now we need to create a single database table from the  
12 above example. Two searches are needed[. One],one at the dynamic table (Fig. 13) and  
13 another at the virtual table (Fig. 14). At the dynamic table of Fig. 13, a search at the column  
14 **Mall\_Name** will be conducted and all e-shops for E-MALL B will be retrieved (rows 4  
15 through 9 of the ID column). Next, at the virtual table of Fig. 14 a search at the column  
16 **Virtual\_Mall** is also conducted and it will search for E-MALL B (it is the e-mall that has the  
17 virtual E-SHOP A-2 and it is located at **Virtual\_Type\_Name** - row # 4 of the **ID** column).  
18 Next, E-SHOP A-2 will be retrieved from the column **Virtual\_Type\_Name**. The first part of

1 the query retrieves the dynamic part and the second one retrieves the virtual part. Following  
2 is a SQL query to do just that.

3 -----  
4 SELECT \* FROM DynamicTable WHERE Mall\_Name='E-MALL B' OR Shop\_Name IN  
5 (SELECT Virtual\_Type\_Name FROM VirtualTable WHERE Virtual\_Mall='E-MALL  
6 B')

7 -----  
8 First, we'll retrieve all database objects for E-MALL B from the dynamic table of Fig. 13  
9 (rows 4 through 9 of the ID column). Second, we'll retrieve all database objects for the virtual  
10 part, which is E-SHOP A-2 (rows 1,2, and 3 of the ID column of Fig. 13).

11 So far, we have explained a virtual e-mail where a single database exists for all dynamic  
12 e-malls, e-shops, e-distributors and web sites, also, only one database table for the virtual  
13 ones. This is just one arrangement, and as we'll see, The dynamic database table can be  
14 located at different servers in a network or over the Internet, or a combination of both.

15 Fig. 15 shows four servers and each having a database table. For simplicity, we are  
16 showing only the table's ID and they represent the table's ID of Fig. 13 (for dynamic servers)  
17 and the table's ID of Fig. 14 (for the virtual server). For example, **SERVER A 1510** hosts

1   **EMAIL A 1512**. The IDs for the ID column 1512 are 1,2 and 3 (ID column of Fig. 13).  
2   Next, the e-mall name at the column *Mall\_Name* is "E-Mall A" for rows 1,2 and 3 (ID  
3   column of Fig. 13). Fig. 15 shows a virtual server 1500 with a virtual table 1502 (ID column  
4   of Fig. 14). **VIRTUAL SERVER 1500** sends request and receives data 1511 from dynamic  
5   **SERVER A 1510** which hosts **E-MALL A 1512**; sends request and receives data 1521 from  
6   **SERVER B 1520** which hosts **E-MALL B 1522**, and sends request and receives data 1531  
7   from **SERVER C 1530** which hosts **E-MALL C 1532**.

8       Requests are sent and data received from different servers in the network or over the  
9   Internet. And they are requests for database objects (table rows) from each server. Once  
10 they're received, they are combined and a single dynamic table is formed, then it is related  
11 with the virtual table 1502 (ID column) at virtual server 1500. Finally, the result is presented  
12 as a single database table to a user. It should be noted that a single virtual database table 1502  
13 (ID column) is shown at virtual server 1500, but it can be more than one table at a single  
14 server, or it can be, more than one database tables at multiple servers. Also, virtual server  
15 1500 can have a dynamic database table and have e-commerce and/or e-services as well,  
16 although not shown.

17       Also, any of the dynamic servers can offer services (e-services/contents) and make them  
18 available to the virtual server. For instance, if **SERVER A 1510** were offering services

1 instead. Services form SERVER A 1510 would be available to VIRTUAL SERVER 1500  
2 and to all its e-malls, satellite e-malls, e-distributors, e-shops and web site. VIRTUAL  
3 SERVER 1500 will make all the interfacing with end-users and then pass any user's entered  
4 information (e.g. credit card information, personal information, etc.) to SERVER A 1510 and  
5 also save at its database as required. The VIRTUAL SERVER 1500 can have any number of  
6 software elements to direct communicate with the Dynamic servers, in this illustration it may  
7 have one that communicate with all three Dynamic servers or it may have three and each  
8 communicating with each Dynamic server. In any case, there will have at least one other  
9 software element to create the presentation, for a client computer or a user at the VIRTUAL  
10 SERVER 1500. Also, the VIRTUAL SERVER 1500 can communicate with any of the  
11 Dynamic servers and request contents at any time, once they are requested by a client  
12 computer or even before they are ever requested, have them ready for presentation and/or  
13 have them saved for future use (cached). This is just a few of the possible arrangements and  
14 anyone skilled in the art will readily know that other ways of using this invention are possible  
15 without departing from its true spirit.

16 We've described a virtual network system where a resource infrastructure exists (VNRI)  
17 and it is offered to third parties (e-mall) and these third parties offer this infrastructure to  
18 others (e-mall, e-distributors/manufacturers). It is the intent of this invention to allow this  
19 same method to be used as virtual solutions where a single infrastructure exists and it is used

by more than one business and each business will in turn uses it and offer solutions to its clients. For example, a manufacturer uses VNRI and offer solutions to its supplier. The manufacturer is like an e-mall and its suppliers are like e-shops. In other words, the process involves three levels: first level is VNRI; second level is an e-mall and the third level is an e-shop. So, VNRI (first level) offers its solution to various locations (second level) and each location (second level) offers VNRI solution (first level) to at least one other location (third level). Also, instead of e-malls, it can be companies with e-portals, also instead of e-shops it can e-services from a company's departments. The first level has the hosting infrastructure and does the hosting of contents, the second level act as go in between the first and third level, doing the virtual hosting, the third level presents contents hosted by the first level through the second level. So, the first level does the dynamic (physical) hosting, the second level does the virtual hosting and the third level does the presentation.

## II) ON-LINE INTERFACE TRANSLATION METHOD

As it has been explained, each web page has objects. They can be audio, video, images, links, forms, text, etc. We'll be discussing text object in particular. As we know, the virtual server e-mall will be used worldwide. Furthermore, it must be able to display *text objects* in



1 the user's own native language. Also, it should have means of translating *database objects*  
2 (products/services), and also, e-shops and e-malls interfaces (text objects).

3 First, let's explore the on-line page interface translation (text objects); second, the  
4 translation of products/services (database objects), and lastly, we'll show how they will  
5 enhance the user's virtual shopping experience.

6 The following are the steps for on-line interface translation: a user at a client selects a  
7 drop down or any other means for selecting a foreign language and the client sends this  
8 request to a server. A program in the server receives the user selected foreign language as  
9 **encoded information** and it represents the user selected foreign language. The program in  
10 the server has a function to translate text objects and it also has program code means for  
11 translating database text objects.

12 Let's first explore the text object translation. The function translating text objects  
13 receives two parameters: one is the **encoded information** (the user selected foreign  
14 language) and the other parameter is a **code reference**. The **code reference** is used to search  
15 a database table and retrieve a row with text objects in different foreign languages in each of  
16 its columns. The **encoded information** is used for retrieving a column which is a reference to  
17 the database table's row that was received in the previous step and it contains text object in  
18 the user selected foreign language.

Now let's explore the translation of database text objects. The **encoded information** (selected foreign language) is combined with a SQL text string and it is a query expression. Once a program in the virtual server executes the query expression, the query's result will only include database text object in the user selected foreign language.

We'll be using ASP (Active Server Page) technology along with JavaScript language for our explanation, since[,] they are frequently used on the Internet. Fig. 16 shows a table (languageTable) with four columns: **ID**, **Phrase\_Code**, **ENG** and **POR**. Fig. 17 shows two parts of a drop down form object and, Fig. 18 the actual HTML code for the drop down form object of Fig. 17.

Let's explore the drop down form object (Fig. 17). It has two parts: the element that is hidden from the user and, the element used by a user to change its state (make a selection). The table of Fig. 17 has two columns: the first column (Hidden Elements), represents the hidden part that the browser uses to send a representation of the user selection to server; the second column (drop down choices), shows the drop down choices used by the user to make a selection. Fig. 18 is the HTML code that creates the drop down of Fig. 17.

Back to Fig. 18. The line "<form name=changelanguage action=newlanguage.asp>" (line # 2) indicates the start of a form object and "</form>" (line # 7) the end of it. The value at the **action** element of the form tag is "**newlanguage.asp**" (line # 2). It will be the page that the

1 web browser will request from the virtual server once the form **changelangue** is submitted  
2 and pass its object (form objects) to it as well. The line "<select name=language  
3 onChange='changeLanguage()>" (line # 3) indicates the start of a drop down object and  
4 "</select>" (line # 6) the end of it. The following two lines are the drop down options. The  
5 line "<option value=ENG>English</option>" (line # 4) is the first option and "<option  
6 value=POR>Portuguese</option>" (line # 5) is the second option. And they are the choices  
7 "**English**" and "**Portuguese**" of the drop down displayed on the web browser.

8 Let's say that the drop down currently has the option **English**, as the selected one. Next, a  
9 user changes it to **Portuguese**. Three things will happen: first, the browser will transfer  
10 control to *function changeLanguage()*; (line # 10) second, the function will submit the form  
11 to the virtual server *document.changelanguage.submit()* (line # 12) - it is the value at the  
12 **action** of the form **changelanguage** "<form name=changelanguage  
13 action=newlanguage.asp>" (line # 2); and third, the server will retrieve *newlanguage.asp*  
14 (Fig. 19) and pass **POR** as a parameter to it - **POR** represents the user's selection.

15 Fig. 19 shows the **newlanguage.asp** (ASP page at the virtual server) with a JavaScript  
16 program. It is divided into two parts: from beginning of the file (line # 1) up to line # 27 is  
17 the ASP program executed by the server. Next, code from the <HTML> (line # 28) tag all the  
18 way to the end of the file (line # 45) is the portion sent back to the user's web browser

1 (HTML objects). Also, codes after the <HTML> tag that are surrounded by "<%" and "%>"  
2 are pieces of ASP code (it usually returns a value and it is inserted into the HTML page).

3 Let's delve into **newlanguage.asp** file Fig. 19. The first line "var  
4 Language=Request.Form("language")" (line # 1) requests the drop down user's selection. It  
5 was passed to the server by the client computer (web browser). Now, the variable **sLanguage**  
6 has the string value "**POR**" (the user selected language).

7 Next, we have a function called "doTranslate(sPhraseCode,sChosenLanguage)" (line #  
8 3). It has two parameters: *sPhraseCode* and *sChosenLanguage*. The first parameter,  
9 **sPhraseCode** receives a **code reference** value to be used to search the column **Phrase\_Code**  
10 of the **languageTable** (Fig.16). The second parameter, **sChosenLanguage** will be an  
11 **encoded information** and it is the user's selected language (the value "**POR**" at the variable  
12 **sLanguage**). Now the function *doTranslate()* will open connections (database and record set)  
13 then perform a query at the **languageTable** (Fig. 16). Next, it retrieves a value from column  
14 **POR** - the user's selected language stored at the variable **sLanguage**. In our example the  
15 value at the Query variable is "*SELECT POR FROM languageTable WHERE*  
16 *Phrase\_Code='ENGL'*" (line # 16 and line # 17). The last line is  
17 *return(languageRS(sChosenLanguage))* (line # 20) and it returns the retrieved value from the  
18 data table.

The next set of code of Fig. 19 is a partial HTML code within the ASP page. It includes the actual drop down and the ASP code (between "<%" and "%>" - line # 32 and line # 35) inserts the function *doTranslate()* returned value into the HTML page. There are two lines with *Response.Write()*'s. The first one "<% Response.Write(doTranslate("ENGL", sLanguage)) %>" (line # 32) will translate element for the drop down that says "Inglês", and the second one "<% Response.Write(doTranslate("PORT", sLanguage)) %>" (line # 35) will say "Português". The new drop down is in Portuguese, which is the selected language.

Let's explore the previous explanation. Lets take the first drop down element "<% Response.Write(doTranslate("ENGL", sLanguage)) %>" (line # 32). The function *doTranslate()* receives two parameters: *sPhraseCode* and *sChosenLanguage*. *SphraseCode* receives the value "ENGL" and *sChosenLanguage* receives the value "POR" (user's selected language). Function *doTranslate()* searches the column **Phrase\_Code** of the **languageTable** (Fig. 16) for the value "ENGL" (row # 7 of the ID column), then, retrieves the value at the column **POR** (user selected language) and it is "Inglês".

The function *doTranslate()* is very basic. Other means will be used for retrieving information instead of opening and closing databases and record sets. It was presented as is for simplicity. Retrieved translation tables can be stored at a session variable or other means for fast retrieval and processing.

Now that we know how text objects of the interface gets translated, we'll go one step further and translate the actual database objects and see how they relate to the virtual e-malls, satellite e-malls, e-shops, e-distributors and web sites.

Fig. 20 shows a database table with two rows and four columns: **ID**, **Product\_ID**, **Language** and **Product\_Title**. The **ID** column holds the table ID's for each row. The **Product\_ID** column holds the ID for each product. The **Language** column[,] holds the language code for each product in the table. The **Product\_Title** column holds the title for each product in the language specified by the language code at the column **Language**. The first row (row # 1 of the ID column) is in Portuguese (the value at the **Language** column is "POR" for Portuguese) and the second row (row # 2 of the ID column) is in English (the value at the **Language** column is "ENG" for English).

Now lets say that, a user views an e-shop and selects a language other than the one currently displayed by the web browser on the client's computer screen. The new screen will show a drop down with the new language, and also, all the web page text objects translated accordingly. This process is called web page text object translation.

Let's now explain how to translate the database objects that are displayed on the page (e.g. product's title, description, etc.). Once a new language is selected, all the database objects at the new web page must be in the new language. And because of this, the new query

will also be affected. Some products/services might be in a different foreign language other than the selected one. As we can see, the number of available products/services will also change.

Fig. 21 shows a dynamic table (DynamicTable2) and it is the same table of Fig. 13 except, we've deleted one column **Product\_ID**, and added two new ones: **Product\_Title** and **Language**. Following, we have the SQL from our previous example. Let's include the user's selected language in it.

```
-----  
SELECT * FROM DynamicTable2 WHERE Language='POR' AND ( Mall_Name='E-  
MALL B' OR Shop_Name IN (SELECT Virtual_Type_Name FROM VirutalTable WHERE  
Virtual_Mall='E-MALL B') )  
-----
```

As we see, the query's result will only retrieve rows 1, 4 and 7 of the ID column (Fig. 21). In our previous SQL example without the use of the user selected language, rows 1 though 9 of the ID column of Fig. 13 were retrieved.

As it can be seen, the user's selected language affects the virtual e-malls, satellite e-malls, e-shops, e-distributors and web sites by changing the number of available good/services. For

example, there are eight products in English (rows 2,3,5,6,8,9,11 and 12 of the ID column) and four in Portuguese (rows 1,4,7 and 10 of the ID column).

### III) TEMPLATE UPLOADING METHOD

There are two ways that a front-end can be interfaced with VNRI's back end: first by selecting a pre-set interface that is within VNRI, second, by a user uploading a customized one. In either case, the interface is the front-end means for accessing the VNRI e-commerce back-end means.

In the case of a user-uploaded interface, it will have means for guiding a server in the inserting of program code and other pieces of information as well (include files). After the uploaded interface is received and processed by the server a new web site is created and as we've said before, it is the front-end means for a client accessing the server back-end means.

Customized user interface will allow a user at any time to change the front-end look without programming knowledge or knowledge of the server back-end structure. Also, a customized user interface will allow the inclusion of e-commerce in a web site without the expense or expertise that an e-commerce infrastructure requires.



For example, a customized interface is the same one that is in use by a web site. This new customized interface is now uploaded to a server with means for processing and creating a new interface. Now, a client is able to fetch both and present an interface with similar appearance to a user. The web site will present its services in the same way as it had done before and the server where the customized interface is located will present the e-commerce part, thus allowing, a web site without e-commerce means to include e-commerce easily and affordably.

We already know that, a client computer communicates with a server computer over a TCP Internet connection. A client sends requests to server then the server sends objects in the HTML format back to client. These objects are then displayed in the client computer as web pages. Fig. 22 shows this setup. Client, client 2230 sends request 2231 to server 2232 than server 2232 retrieves an ASP page and *include files* (files to be included into the ASP page) as needed 2233. Server 2232 then sends the page back to client 2230 as HTML page 2234.

A true virtual e-mall, satellite e-mall, e-shop or web site will also need means for the user to change its interface without having to access the server computer which hosts them. Fig. 23 shows an ASP page template. The first part 2370 creates variables and opens database connection. After a ~~connections~~ connection is opened, indexes representing links to products/services at the e-mall, e-shop or web site is created 2372. After a link is selected, a

new page with the products /service information (e.g. title, description, image, etc.) is received. Finally, before leaving the page, opened connection is released to free resources that are no longer needed.

As it was shown at Fig. 22, an ASP page has *include files* and, it can be a program in any acceptable ASP language. First, these *include files* are inserted into the ASP page[,] then the server executes them. Their results will in turn be inserted into the new created file. This new file will then be transmitted to the requesting computer (client) in the HTML format.

Fig. 24 shows the same template from Fig. 23 with *include file tags* inserted into it. Before.inc is where database connection, record set and variables are created. Indexes.inc create web page links and they will be used to select a new web page - main\_page.inc. At the end of the page, all page's objects are released - after.inc.

So, a HTML page can be created from an ASP template by having *include files* inserted into it. And once we have a standard ASP templates format, we can exchange them in and out without affecting *include files*. All we need to do is: create a new template with a new look; insert the *include files* tags, next, a new web page is created based on the same set of *include files*. Changes can also be made directly to an *include file* without affecting the remaining ASP page.

1        Since we are creating virtual e-malls, e-shops, e-distributors and web sites, users will  
2        need means for exchanging interfaces without having physical access to the virtual server. It  
3        can be a user supplied interface or one supplied by the virtual server.

4        Fig. 25 shows how to replace an interface. The top part 2590 is the old interface and the  
5        bottom part 2591 is the new one. Users can upload a new interface template, or chose one  
6        from the virtual server 2592. The new interface 2591 will then replace 2593 the old interface  
7        2590.

8        All interfaces reside in folders within the virtual server. Let's explain what a folder is  
9        before proceeding any further. A Folder is a container of files or other folders. A good  
10       example is a file cabinet. A file cabinet has drawers - they are like folders; files within a  
11       drawer are like files within a folder.

12       Fig. 26 shows two ASP templates. The first one ShopCart.asp 2600, has a folder's path  
13       added to each include file "<!-- #include file="ShopCart/before.inc" -->"; the second template  
14       ShopPage.asp 2601, has a different path in the include file "<!-- #include  
15       file="ShopPage/before.inc" --> ". The folder's path as part of the *include files* tells the server  
16       where *include files* are located. For example, "<!-- #include file="ShopPage/before.inc" -->"  
17       tells the server that **before.inc** is located in the folder **ShopPage**.

Fig. 27 shows the folder structure for Fig. 26. It has three folders: **ShopCart** 2702, stores all include files for template ShopCart.asp 2600 (Fig. 26); **ShopPage** 2703 stores all include files for template ShopPage.asp 2601 (Fig.26), **Templates** 2704 stores ASP template ShopCart.asp 2600 and ShopPage.asp 2601 (Fig. 26).

Let's delve into folder **Templates** 2704. As we see, the file **ShopCart.asp** 2705 is the same template 2600 (Fig. 26) and the file **ShopPage.asp** 2706 is the same template 2601 (Fig. 26). Once a new template is uploaded with its respective include files and include file's path into the **Template** folder 2704, a new interface will then be in place for an e-mall, e-satellite e-mall, e-shop or web site.

Furthermore, a single ASP template can be uploaded and have a program in the server to create others with the correct path in each one of them. We've shown a very simple folders structure with only three folders, in reality, a folder structured can have any number of folders, and a folder can have any number of files. Also, we've named the folder as ROOT 2707 (Fig. 27), although it can be any name. It could've been a name for an e-mall, satellite e-mall, e-shop or web site as well.

Fig. 28 shows a setup where a client computer with a web browser 2813 receives templates from Virtual Server 2815 and Host Server 2814. Host Server 2814 establishes a communication link 2810 with Virtual Server 2815 and uploads a set of templates 2820-a.

1 When the web site is first accessed. Client 2813 requests and receives a new interface 2820-a  
2 from Host Server 2814 through connection 2811. Once a user selects any link that refers to  
3 the virtual shopping environment, or to virtual web pages (located at Virtual Server 2815).  
4 Client 2813 then requests and receives the next set of interfaces 2820-b (web pages) from  
5 Virtual Server 2815 through connection 2812. From this point on, Virtual Server 2815 will  
6 supply the new interface 2820-b and it will have the same look as the interface 2820-a located  
7 at the host computer 2814. The user at the Client Computer 2813 will only notice one  
8 interface 2820-c, displayed on the computer's screen, although, it is coming from two  
9 different servers or two different URL's.

10  
11 As presented, templates can be uploaded to the virtual server and be used by an e-mail,  
12 satellite e-mail, e-shop or web site for the purposed of presenting a single interface to a user  
13 at a single web browser location, although it may be fetched from multiple locations.

#### 14 15 16 IV) FILE WITH SETTINGS UPLOADING METHOD

17  
18 ~~A user-uploaded file with settings contain~~ A user-uploaded file with settings contains  
19 parameters that are associated with a variable name or any other means for allowing [its] it's

processing and the extraction of its parameters. For example, the file with settings may have the following: "*background\_color='ffffff'*", in this case, once the parameter '*ffffff*' is extracted from the file with settings, the program will know that it represent a value to be used to set the web site or a web page's background color to white.

Now we'll discuss the uploading of file with settings that goes along with an interface. Its purpose is to allow an interface to have more than one appearance. It may have different background colors, different text colors, different text sizes, different table formats, etc.

Fig. 29 shows a file with settings 2900 being uploaded to a server with templates 2902 and at the server it is read and its contents included in a template 2904.

Fig. 29a shows the same file structure of Fig. 27 except two more files are present at templates folder 2984: ShopPage.stg 2980 (file with settings for template ShopPage.asp) and ShopCart.stg 2982 (file with settings for template ShopCart.asp).

Fig 30 shows a file with settings and its settings being used by a template file (ShopPage.asp) 3041. It has **Page\_Background=#ffffff** 3040 it is the color white for the template's background (web page) and it is represented in the <BODY> tag as

**BGCOLOR="#ffffff"** 3052. Also, **Page\_Font\_Color=#000000** 3042 is **TEXT="#000000"** 3054 (default black color for all text in the web page). The **Page\_Link\_Color=#0000ff** 3044 is the blue color used by the web page links and it is **LINK="#0000ff"** 3056.

There are three more settings and they are used for other purposes than changing the pages default colors. They are used to change text part of the web page created by the web server. **Title\_Font\_Color=#ffff00** 3046 is **color="#ffff00"** 3058 at the <FONT> tag and it is the color yellow. **Title\_Font\_Size=3** 3048 is **SIZE="3"** 3060 and **Title\_Font\_Face="Verdana, Arial"** 3050 is **FACE="Verdana, Arial"** 3062. The last three settings will make "THIS IS A PAGE TITLE" 3064 in yellow, with the font size of "3" and "Verdana" or "Arial" for the font type.

It is now clear that all that is needed for changing a web page template is to upload a file with settings with different settings and the web page will change its look accordingly. This method will allow a single template to be remotely programmed and have more than one look without changing the template or its content.

Functions necessary to read the file with settings, separate and place its settings in a memory array is not shown and is done as is for sake of simplicity. Also, the file with settings

has just a few settings values, there can be any number and be used differently for the purpose of changing the interface appearance.

#### V) SATELLITE E-MALLS

A satellite e-mall is very similar to an e-mall, except it is a loosen one by making. It has one or more e-services, also, there can have many satellite e-malls and each offering all kind of e-services and making them available to any e-mall or e-shop in the VNRI. It is up to an e-mall to include or exclude a satellite e-mall.

Once an e-mall includes one, the e-mall inherits its e-services and its behaviors as well. An e-mall with a satellite e-mall will be able to present the satellite e-mall's e-services along with its e-shops products and most of the cases it will be specialized e-services. For example: an e-mall includes a satellite e-mall that is specialized in car sales. Every time users access the e-mall and the satellite e-mall's e-service that is part of it. The e-mall e-commerce part may only display products that are related to cars in general.



Also, the e-service from a satellite e-mall has guiding means for guiding the e-mall in the displaying of its products along with the e-service. The guiding means may be an **encoded information** in a hidden field of a form or it may be words within the e-service page.

There are other means for presenting e-services to a satellite e-mall as well. And it is using e-services located in a different server (third party server) than a server within the VNRI. The third party server will make its e-services available to VNRI and VNRI will make them available to a satellite e-mall or format them in a content page and make them available to a requesting client computer, VNRI can save them for later use as well (cache them). E-malls at VNRI are able to incorporate the satellite e-mall and its e-services by incorporating the satellite e-mall containing them. VNRI will use the third party server's e-services and format a page having the received e-service and e-commerce/e-services from VNRI and both content having a relationship, the relationship will be at least one object from the third party's content being related to at least one object of VNRI's e-service/e-commerce (e.g. partial match, exactly match, synonymous meaning, etc.). This is just one more way of doing it and anyone skilled in the art will know that more arrangements are possible without departing from the true spirit of this invention.

1 As we've mentioned before, HTML is displayed on a computer screen as objects. Each e-  
2 service is one or more object and they can be text, image, form, links etc., and at least one  
3 object in the page will have at least one **encoded information** and the **encoded information**  
4 will be the guiding means for guiding the server to include at least one other object in the  
5 page and transmit it to a client.

6  
7 As it has been presented so far, The virtual network has e-malls and e-malls [has] have e-  
8 shops and web sites. Also, as we'll see, the virtual network has means for creating and  
9 maintaining satellite e-malls and make them available to all e-malls in the virtual network  
10 (pre-set satellite e-malls). Also, the same means for creating and maintaining satellite e-malls  
11 is available for each e-mall in the network (customized satellite e-mall).

12  
13 Satellite e-malls at the virtual network are specialized and e-malls use them as is and will  
14 not be able to make changes to them. On the other hand, a satellite e-mall created by the e-  
15 mall is customized and can be changed at will by the e-mall that created it.

16  
17 A satellite e-mall is an e-mall where e-services and e-commerce can be offered  
18 simultaneously at the same web page and e-services will enhance the e-commerce  
19 counterpart. If a user at a web browser is viewing a satellite e-mall web page and he/she

1 selects a link, drop down list or any other means at the e-service side. The e-commerce part  
2 will change as well to reflect the e-services.

3  
4 E-services offered by a satellite e-mall can be of any kind: Auction, Car Sales, Realty,  
5 etc. Also, it can be of any kind of specialized web site: Sports, News, Weather etc.

6  
7 The virtual network will have many e-services available to e-malls, satellite e-malls, e-  
8 shops, e-distributors and web sites. And any will be able to select and include web pages of e-  
9 services provided for by the virtual network. Each of these e-services web pages will be  
10 already translated into the foreign languages that are supported by the virtual network. These  
11 e-services web pages will permit customization process without having e-services of their  
12 own.

13  
14 The e-commerce and the e-services may or may not reside at the same location. They can  
15 be at a single or multiple URL addresses, folders, databases or database tables.

16  
17 Let us explore this concept a little further. Let us say that that an e-mall has some e-  
18 shops selling sporting goods, some others selling cars accessories and still others selling  
19 music CD's (let us call it: **e-mall A**). Now let us say that a satellite e-mall in the virtual

1 network is specialized in offering car services (let us call it: **satellite e-mall Car Sales**).

2 Besides its specialization in car services, this satellite e-mall will have departments related to  
3 cars, for instance, a department for car accessories.

4  
5 Now, if the **e-mall A** includes the **satellite e-mall Car Sales** into its architecture. Every  
6 time a user access the **satellite e-mall Car Sales** he/she will be able to view all information  
7 about cars and also view all car accessories products from the **e-mall A** along with car  
8 accessories products from distributors/manufacturers.

9  
10 The idea is to allow e-commerce and e-services to be displayed on a single web page  
11 although they come from two different locations. In the above example, the e-commerce  
12 comes from **e-mall A** and the e-services comes from the **satellite e-mall Car Sales** that is  
13 part of the virtual network and available to all e-malls in the virtual network system. The  
14 satellite e-mall will allow an e-mall to offer more specialized services than it could otherwise.  
15 Anyone skilled in the art knows that the two separate contents having relationships and  
16 displayed at the same page can be both e-services or they can be both e-commerce.

17  
18 Now is time for us to delve a little further and discuss how the satellite e-mall will  
19 enhance the shopping experience in an e-mall

Fig. 31 shows this arrangement, the virtual network 3100 has three satellite e-malls 3102, 3104 and 3106 and each of this satellite e-malls having distinct services. **The satellite e-mall A 3102 specializes in Car Sales, satellite e-mall B 3104 specializes in Auction and satellite e-mall C 3106 specializes in Sports.** Also, there are two e-malls: **e-mall A 3108 and e-mall B 3112.** Now each one will have more services and products for selling besides the ones that are available within their respective e-shops.

**E-mall A 3108** now has **Car Sales 3102** and **Auction 3104**. When a user views an Auction for a specific product (e-services) the drop down tree at the web page on the left (e-commerce) will be set accordingly to show the user that a similar product is also available in an e-store within the e-mall. The same is true for **e-mall B 3112**. It has a **satellite e-mall B 3104 (Auction)** and **satellite e-mall C 3106 (Sports)**. Now **e-mall B 3112** will have **Auction** and also sell **Sports** related products from its e-shops along with **Sports** related products from e-distributors/e-manufacturers.

Since the virtual network will host a variety of e-malls and they in turn will host a variety of e-shops. Any e-mall with a **satellite e-mall Auction** will offer to their e-shops means for

1 placing their products in the auction and it will be available to every e-mall hosting the  
2 **satellite e-mall Auction.**

3  
4 If we look just bellow **e-mall A 3108** and **e-mall B 3112**, we'll see that each e-mall has a  
5 customized satellite e-mall. **Customized satellite e-mall A 3110** for **e-mall A 3108** and  
6 **customized satellite e-mall B 3114** for **e-mall B 3112**.

7  
8 The customized satellite e-mall is different than a satellite e-mall supplied by the virtual  
9 network. The e-mall creates and maintains a customized satellite e-mall and supplies its e-  
10 services or select one from the virtual network, also, selects departments for it's e-commerce.  
11 A customized satellite e-mall is unique to each e-mall while the satellite e-mall supplied by  
12 the virtual network is the same for any e-mall that offers its services.

13  
14 Fig. 31a and Fig. 31b are further overview of how e-services can be incorporated into a  
15 satellite e-mall through VNRI. E-services (contents) are received from third parties (servers)  
16 by the VNRI and made available to satellite e-malls as if each e-services had been provided  
17 by the VNRI. Each e-service displayed on a client computer screen is one or more objects and  
18 they can be image, text, form, frames, etc.

Fig. 31a shows e-services provided by third parties 3140 to VNRI 3142. As shown, Satellite e-mall A 3144 and Satellite e-mall B 3146 are receiving e-services available at VNRI 3142, although they are located at the third party server 3140. Now that satellite e-malls have these e-services and after an e-mall incorporates any satellite e-mall, all e-services that are part of the satellite e-mall become part of the e-mall.

Fig. 31b shows another method of making e-services available to satellite e-malls. As shown, there are three e-services: E-service A 3160, E-service B 3162 and E-service C 3164 and all three are made available to VNRI 3166, and they are supplied to VNRI by a third party server. Now VNRI 3166 will make all three e-services available to satellite e-malls. Satellite e-mall A 3168 has E-service A, E-service B, E-service C and contents from the VNRI (3170). Satellite e-mall B 3172 has E-service A and E-service B (3174). As it has been previously explained, once an e-mall incorporates either satellite e-mall A or satellite e-mall B, their e-services along with VNRI's contents (if any) will be part of the incorporating e-mall.

As we turn to fig. 31c it shows **satellite e-mall A 3182** with a **group of contents 3180** (Content A, Content B and Content C). **Satellite e-mall A 3182** is incorporated by **E-mall A 3184** and **E-mall A 3184** incorporates "Content C" and "Content G" **content page 3186**. "Content C" and "Content G" are presented virtually by **E-mall A 3184** since "Content C" is

retrieved from **Satellite e-mail A 3182 content group** 3180 and "Content G" from VNRI 3196 **content group** 3198. Arrow lines A1 and A2 show these relationships. The rest of the figure is self-explanatory and anyone skilled in the art will be able to understand its meaning based on the explanation just given. Figs. 31b and 31c are just one arrangement that can be accomplished with the combination of Satellite e-mails, E-mails and the virtual nature of VNRI.

Once an e-service is displayed on a client computer it will be one or more objects and having means for its association (e.g. page object, link, etc) with the VNRI's e-commerce or other e-services. The association will enable at least one e-commerce/e-service from VNRI to be displayed along with the current displayed content on the client computer screen (e.g. on the same screen window, on a new window, etc.). ~~Once an e-service is displayed on a client computer it will be one or more objects and~~ Also, at least one of these objects displayed on the client computer screen will have means to enable communication between the client computer and VNRI. The client computer will process the object and initiate a communication with VNRI passing parameters about the displayed content page and the server's location from where it was fetched. Next, VNRI will use the received parameters than it will fetch the e-service/content (the same one that is displayed at the client computer) from the server where it is hosted. After receiving the e-service/content VNRI will process its



objects and fetch at least one other of its stored e-service/content or e-commerce that is related to the received content, and return it to the client computer. Therefore, e-service/content displayed at the client computer will be fetched from the VNRI and at least one other server and both contents having a relationship with each other. Instead of requesting the e-service/content from the third party server every time an end user at the client computer requests it, VNRI may fetch it once, process it, and stores the processed objects for future use. Also, it can be fetched before its first use by using VNRI's registration means described at the "CUSTOMIZED WEB SITES (CONTENTS)" section.

As we turn to fig. 31d it illustrates what we've just described, and it shows **content page** located at a **remote computer** 3170-d and this remote computer is not part of the VNRI infrastructure. Also, a **group of contents** 3178-d are located at the VNRI and a **single content page** 3172-d having contents from both sources. Content 3170-d is requested and received (arrow 3176-d) by a client computer (single page 3172-d) from the remote computer, than at least one content will be requested and received from VNRI (arrow 3174-d). Once we review the contents received from **remote computer** 3170-d and part of **content page** 3172-d it says: "This content is from here" and the contents from VNRI 3178-d, part of **content page** 3172-d say: "This"; "Content" and "From". As we analyze, **content page** 3172-d has the word "This" and it is related to the inserted word

1     ~~“This”~~ “These” from content group 3178-d, also, content 3172-d has the word “content”  
2     and related to the word ~~“Content”~~ “Contents” from content group 3178-d, and in both cases,  
3     the matching are based on singular/plural of the matching words. This illustration shows  
4     that at least one object (words in this illustration) must have a relationship between both  
5     content sources and it doesn’t necessarily need to be an exactly match for the relationship,  
6     nor the related words need to be present at the final page displayed at the client computer  
7     screen. Their relationship may only happen at the indexing mechanism with VNRI.

8  
9         As it has already been explained, objects of content 3170-d are used as the input means  
10    (searching keys) for locating other contents at VNRI and returning at least one matching  
11    content to the requesting client computer and the client computer will display the content  
12    received from the remote computer 3170-d and at least one content received from VNRI  
13    3178-d. Also, the content can be fetched as requested for the first time and stored for future  
14    use, or, the contents can be fetched before its first use and it can be done by using VNRI’s  
15    registration means described at the “CUSTOMIZED WEB SITES (CONTENTS)” section.

16  
17         Now, lets turn to fig. 31e and it shows one object for inserting inline content into a web  
18    page, other means exist as well. We’ll view three techniques that can be used, although others  
19    can be devised and used as well without departing from the true scope of the invention. The

1 first one 3184-e shows '`<iframe`  
2 `src="www.vnri.com/default.asp?id=remoteabc&location=www.remote-computer.com"`  
3 `width="100%"></iframe>`'. The "src" indicates the source from where the client computer's  
4 browser will fetch the next content from, VNRI in our example. As the client computer  
5 contact "www.vnri.com" it will request the web page "default.asp" and pass  
6 "id=remoteabc&location=www.remote-computer.com" to the web page. The web page  
7 "default.com" will retrieve the value "remoteabcd" from "id", and the value "www.remote-  
8 computer.com" from "location". Next, the value "remoteabc" of the "id" parameter is used to  
9 search the content 3170-d stored at VNRI and use at least one of its objects to fetch at least  
10 one content 3178-d that are stored at VNRI. Finally, "location" has the URL location of the  
11 remote computer where VNRI will fetch the content 3170-d from, if this is the first time that it  
12 has been requested.

13  
14 3186-e is just another way of fetching contents from VNRI and as we look at the object's  
15 parameters, instead of "location" it has "words" and a list of words that can be passed to  
16 VNRI. In this case, instead of VNRI fetching the content from the remote computer, it uses the  
17 passed words for searching contents. And the last one, 3188-e shows just the "id" of the  
18 remote computer and it can be used to fetch objects from the remote computer that are already

1 stored at VNRI. Any one skilled in the art will know that the presented arrangements are not  
2 the only ones and many others can be devised and implemented as well.

3  
4 Also, contents can be fetched by the VNRI from third party servers (third party servers  
5 not associated with the VNRI infrastructure) and pass them on to other third [part] party  
6 servers. The other third party servers in turn will make the contents received from VNRI  
7 available to end users at client computers accessing them. So, [a] an end user at a client  
8 computer accesses a server and request at least one content, the server requests the at least one  
9 content from VNRI. Next, VNRI will request the at least one content from other third party  
10 servers and return any received content from the requested third party servers, then transmit  
11 them to the third party server that initiated the request. VNRI acts as an intermediary between  
12 at least two third party servers and performs the job of fetching and supplying contents from/to  
13 other servers.

14  
15 Fig. 31f illustrates what we've just described. VNRI 3194-f fetching contents from one  
16 or more sources, from two computer in this arrangement, 3190-f and 3192-f, and making any  
17 content fetched from the remote sources available to another computer 3196-f and the  
18 computer 3196-f connected to a client computer 3198-f and the content 3199-f that was

1 fetched from 3192-f displayed at the client 3198-f, VNRI can retrieve and save contents at  
2 any time (cache them), before any requests or after they are requested by a remote computer.

3  
4  
5 Fig. 32 shows what we've discussed so far. On the left part of the web page 3220 is  
6 where the e-commerce part will be displayed and on the right part 3222 is for the e-services.

7  
8 Fig. 33 shows a further embodiment of Fig. 32. On the left links 3320 has a tree drop  
9 down menu with **Shoes** and **Apparel** for the **departments**. The **department Shoes** has  
10 **Women** as **category** and the **category Women** has **Tennis** as a **sub-category**. On the right  
11 window 3322 (satellite e-mall activity window) has three drops downs: **department 3328**,  
12 **category 3330** and **sub-category 3332**. At the top of each drop down there is the user choice  
13 for it. **Shoes** for **department 3328**, **Women** for **category 3330** and **Tennis** for **sub-category**  
14 **3332**. We're showing drop downs as means for the communication between the e-services  
15 **3322** and the commerce **3320**.

16  
17 Other means can be used as well, like, hidden form elements with department, category  
18 and sub-category codes encoded in them. Also, embedded information with key words at the  
19 e-service web page, or even, the use of the information at the web page as indexing key

1 words that the server will use to search the e-mall's database and provide a list that match the  
2 words in the e-service web page. One other way to embed information in a page is by using a  
3 pair of HTML tags. Opening tag "<!--" and closing tag "-->". The browser will not display  
4 any content in between these two tags. The purpose of having content embedded within the  
5 page's content is to allow the insertion of words and/or information that are not yet part of the  
6 page's content. It may be words with synonymous meaning about other words on the page or  
7 related words that will help in further describing the page's content. Also, there are other  
8 kinds of tags that are used just for the purpose of embedding content to the HTML page and  
9 they are familiar to anyone with skill in the art.

10  
11 In the case of customized e-services. It can have embedded information pertaining to the  
12 e-mall supplying the customized e-service, and, whenever the e-service is used virtually by  
13 another e-mall, satellite e-mall or web sited in the virtual network. Also, products from e-  
14 stores of the e-mall that is supplying the e-service will be available virtually at each one  
15 based on the embedded information at the e-service's web page. The e-service web page that  
16 receives one or more content from the satellite e-mall that supplied the e-service page is the  
17 receiving content page, and the content that will be incorporated (rendered) into the receiving  
18 content page is the supplying content. A receiving content page can have one or more

1 supplying content target to it and a supplying content can be targeted to one or more receiving  
2 content page.

3  
4 Fig. 34 is a further embodiment of Fig. 33. It shows a list of products displayed on the  
5 right window 3322 that is the user's selection (Tennis 3321) from the left window 3320.  
6 There are two products with respective images, titles with links and a check box. **Tennis** as  
7 the selected **sub-category** 3321 has product **Tennis Shoe ABC** (image 3444, title with a link  
8 3442 and a check box 3440) and **Tennis Shoe XYZ** (image 3434, title with a link 3436 and a  
9 check box 3438). Also, a button 3446 is present on right window 3322 for the purpose of  
10 placing selected items in a shopping cart. In our example both items will be placed in the  
11 shopping cart, since they are both checked (check box 3440 and check box 3438).

12  
13 As we turn to fig. 34a it is a further embodiment of fig. 34 and fig. 31d and it shows a  
14 single content page having two e-services (contents). **Content** 3460 and another **group of**  
15 **contents** 3462 and both are located within VNRI. **Content** 3460 can be hosted/stored along  
16 with or separated from the **content group** 3462. Now the **content group** 3462 might be  
17 related to the same category as **content** 3460, or they can be from a different category, since  
18 the objects at **content** 3460 will direct VNRI which contents from the **content group** 3462 to  
19 fetch and include into the **content page** 3464. It should be understood that previously visited

1 contents' objects (they are explained at "CUSTOMIZED WEB SITES (CONTENTS)") could  
2 be used as searching key (input objects) as well. They can be used alone or in conjunction  
3 with the objects from **content** 3460. The idea is that at least one object of the **content being**  
4 **fetches** 3460 or objects of previously visited content(s) be used as input for searching other  
5 contents located at VNRI, **content group** 3462. Also, the **final page** 3464 is very simplistic  
6 for sake of clarity and not intended to obscure this invention. Contents from VNRI 3462 and  
7 inserted into **content page** 3464 can be a complete content page, a brief description of the  
8 actual content, partial content with links pointing to the location where the content originated,  
9 etc. In case a link is present and once it is clicked the user will be directed to the content's  
10 source and view the actual content, and, it can be within VNRI or leave VNRI altogether.

11  
12 In one other embodiment, VNRI can use objects of the receiving content (content being  
13 requested by an end user at a client computer) to form a relationship with at least one object  
14 of a previously viewed content, then use at least one object from the previously viewed  
15 content (the previously viewed content having a relationship with the receiving content) and  
16 form a relationship with at least one other content within VNRI and have it inserted  
17 (rendered) into the content page of the receiving content. The same method can be used with  
18 end user profiling information and end user's pre-set preferences. They can be combined in  
19 any manner with the user's previously viewed contents and the current content being



requested for viewing (receiving content). For instance if the receiving content has the word  
“football” and the end user lives in San Francisco-CA, contents related to football and  
located in San Francisco-CA and the surrounding areas may be included.

#### VI) SURF USER LIST

As we've seen so far, the virtual network comprises of e-malls, satellite e-malls, e-shops, e-distributors/e-manufacturers and web sites. Also, an e-shop from one e-mall can sell virtually in another e-mall. As we see, a web browser user accessing an e-mall in the virtual network will come across web pages from different e-shops dynamically located at the e-mall, web pages from virtual e-shops (e-shops dynamically located at a different e-mall) and also from e-distributors/e-manufacturers.

Lets say that the web browser user later return to the e-mall and want to find a product that he/she saw on a previous visit. Lets also say that the product was from a virtual e-shop and it is no longer available virtually at the e-mall. The user will think that the item is no longer available because the e-shop is no longer virtually located at the e-mall. From this

scenario it is clear that there is a need for a mechanism to track and keep the user surfing experience.

Each page of information supplied to each client have a **surf code reference** and it is used for automatically storing a reference for each information supplied to each client and it forms the **surf user-list**. Once the user requests his/her surf user-list, the server will use **each surf code reference** and create the **surf user-list** and sent it to the user. A **surf user-list** will only include information that was previously viewed by the user.

Also, an end-user at a client with a login means and after logging on the server, he/she will be able to request the server to save his/her surf user-list for later review. The server will save the surf user-list based on the end-user ID that is part of the login information in the server.

Fig. 35 shows the communication that takes place between a web server and a web browser, when the web browser accesses the web server for the first time. The web browser 3552 initiates communication 3553 with the web server 3554. The web server 3554 generates a tracking number 3560 and send it 3556 to the web browser 3552, now the web browser 3552 will store it in a cookie 3566. This process will allow the web server 3554 to keep track

of the web browser that is accessing it. We're showing the ASP technology but it can be implemented by other technologies as well.

Fig. 36 shows a web browser 3552 accessing web pages from: e-malls, e-stores and web sites. Web browser 3552 fetches web pages from each one of them. From e-shop A end-user at the web browser 3552 - view **products 123** and **456** (3674). From **e-shop B** will view **product 789** (3678). From **e-mall A** 3680 - view **product 145** (3682). From **e-mall B** 3684 - view **products 100** and **102** (3686) and from **web site** 3688 views web pages **News** and **Weather** (3690).

Fig. 37 shows the process that takes place at each request. The web browser 3552 sends a request 3702 to the web server 3554, the web server 3554 send a request for cookie called **user\_tracking\_code** 3722 to the web browser 3552. Now the web browser 3552 will retrieve the value "0123656" from the cookie **user\_tracking\_code** 3566 and send it 3706 to the server 3554. The web server 3554 will first save the requested web page or the product page's code in the session variable **user\_tracking\_code** 3560 and second it will fetch the web page or the product's page 3726 and sent it 3728 to the web browser 3552.

Fig. 38 shows the process that takes place once a user at the web browser 3552 requests to view his/her surf list 3560. The web browser 3552 sends a request 3810 to the web server 3554. The web server 3554 will send a request 3812 to the web browser 3552 for the value of the cookie **user\_tracking\_code** 3566 and the web browser 3552 will fetch the value "0123656" from it and send 3814 to the web server 3554. The web server 3554 will fetch the values that are stored in the session variable **user\_tracking\_code** 3560. Next, the web server 3554 uses the list just retrieved from the session variable 3560 and searches the database 3832. And finally, it will fetch web pages and/or product's page that correspond to the values in the session variable 3560 and sent the page to the web browser 3552 through connection 3816.

Fig. 39 shows a web page with links on the left 3950 and they are links for the user surf list. They are the same ones that are stored in the session variable **user\_tracking\_code** 3560 (Fig.38). On the right 3952 we see a page that the user has just selected from his/her surfing list 3950. And the selection was 123 (3951) and its contents are now displayed on the right 3952 and they are the item's image 3958, the item's title and description 3956 and also a button 3954 to place it in a shopping cart. Once again, a very basic web page was shown for sake of simplicity. The user's list can be grouped based on the user's visited content category, dynamic content, virtual content, etc. for instance, a list only containing e-commerce (goods

1 for sale), in another instance a list may only contain e-services (contents), still another way is  
2 to present all contents together (e-services and e-commerce contents), yet another may only  
3 list contents hosted by the e-shop/website (dynamic contents), still another way only contents  
4 hosted by other e-shops/web sites (virtual content), etc. and anyone skilled in the art will  
5 readily know that contents can be grouped based in a department, category, subcategories,  
6 etc. and there are many more ways to present previously viewed contents to a users in the  
7 form of a historical user list base on the user surfing activities.

8  
9 We've shown values stored in a session variable **user\_tracking\_code** 3560 (Fig.38). It  
10 can be stored in a database as well for the purposed of tracking and recording the user activity  
11 and always have his/her surf list available[.] and as explained above, the user surf list will be  
12 saved for the user and it can be based on the user's ID as part of the user's registration  
13 information, this is not the only way, other ways can be used as well, like the user's ID  
14 associated with the cookie tracking number, an ID to identify the visited content department,  
15 category, subcategory, virtual contents, dynamic contents, etc. The contents can be located at  
16 a single computer or on multiple computers over a network or over the Internet.

17  
18  
19 VII) CUSTOMIZED WEB SITES (CONTENTS)

Besides the user surfing tracking system, the virtual network will also have means for customizing web sites to each user. Once a user is registered, personal information and personal preferences will be used as to allow the virtual network to customize web sites to each user as to reflect the user's preferences and also the user's location.

There will be a plurality of information about a specific subject matter and upon a user access the server it will customize a web site. A customized web site will allow a server means for presenting different information about the same subject matter tailored uniquely to each user based on each user's pre-set information stored in the server.

A user furnishes information to a server and once the same user returns to the server and log in, the server will only supply information to the user that is relevant to the user and based on the user pre-set information that is stored in the server. Also, any user interaction (search query included) with the server (VNRI), the server will only return content that is relevant to the end user preset information, user's location and user's previously viewed contents. Searching and querying a database has been fully explained at (ON-LINE INTERFACE TRANSLATION METHOD) and elsewhere.

Let's say that user has **Soccer** and **Football** for sports preferences and the local of residency is San Francisco, California, USA. Another one residing in Salvador, Bahia, Brazil has **Soccer** and **Basketball** for sports preferences. Now, both users will access the same web site at the same time and view sports. The user residing in San Francisco, California, USA will view information for Soccer and Football for leagues from San Francisco, California and USA, while the second user will view sports information for leagues from Salvador, Bahia and Brazil.

The same method can be used to set user previous visited web pages or products page. For instance, a user visits a product page about fishing. Next time he/she comes to any web site within VNRI with e-services, fishing related information will be part of the web site along with fishing products (e-commerce part).

As we turn to fig. 40 it shows what we've described so far. VNRI 4000 has user's preferences 4018 and for "User A" they are "Sports" and "USA" (USA could have been extracted from the user's registration information) and once "User A" access the virtual network 4000 "User A" will view only sports related contents from USA, 4004 and 406 at client computer 4002, and they are contents 4008 and 4014 respectively. Once "User A"

returns to VNRI the same two contents will be displayed automatically as it is shown by fig. 41.

It is to be understood that all e-commerce (goods/products) and e-services (articles/services) within the virtual network are available to all e-malls, satellite e-malls, e-shops, e-distributors and web sites virtually. Also, means will be available as to allow each e-mall to make its customized e-service(s) available to others e-malls, satellite e-malls, e-shops, e-distributors and web sites at the virtual network.

~~Many more arrangements can be created and incorporated in this invention. While it has been fully described in connection with the illustrated embodiments, it will be appreciated and understood that modifications may be made without departing from the true spirit and scope of the invention. We've used the term e-malls and e-shops all along but instead of e-mall, it can be called e-portal and instead of e-shops, it can be a combination of e-shops and e-services. Also, the arrangements presented can be used individually or in any combination thereof. Furthermore, this invention will allow the creation of a worldwide virtual environment.~~



1       We've used the term e-malls and e-shops all along but instead of e-mall, it can be called  
2       e-portal and instead of e-shops, it can be a combination of e-shops and e-services. Also, the  
3       arrangements presented can be used individually or in any combination thereof. Furthermore,  
4       this invention will allow the creation of a worldwide virtual environment.

5  
6       Although the present invention and its advantages have been described in detail, it  
7       should be understood that various changes, substitutions and alterations can be made herein  
8       without departing from the spirit and scope of the invention as defined by the appended  
9       claims. Moreover, the scope of the present application is not intended to be limited to the  
10       particular embodiments of the process, machine, manufacture, composition of matter, means,  
11       methods, software elements and steps described in the specification. As one of ordinary skill  
12       in the art will readily appreciate from the disclosure of the present invention, processes,  
13       machines, manufacture, compositions of matter, means, methods, software elements, or steps,  
14       presently existing or later to be developed that perform substantially the same function or  
15       achieve substantially the same result as the corresponding embodiments described herein may  
16       be utilized according to the present invention. Accordingly, the appended claims are intended  
17       to include within their scope such processes, machines, manufacture, compositions of matter,  
18       means, methods, software elements, or steps.